

**Notice of Allowability**

Application No.

10/048,226

Applicant(s)

HAYASHIKAWA ET AL.

Examiner

Tuan N Nguyen

Art Unit

2828

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/18/2004.
2. ☒ The allowed claim(s) is/are 8-13.
3. ☒ The drawings filed on 15 January 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>10/21/04</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|   | 9. <input type="checkbox"/> Other _____  |

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below, claims 1-7, 14-15 have been canceled, claims 8, 9, and 13 have been amended. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Thomas D. Robbins (Attorney for Applicant, Reg. No. 43,369) on 10/21/2004.

In the claims 8, 9, 13:

8. **(Currently amended)** A laser oscillator comprising:  
a discharge tube operable to pass laser gas inside thereof and to excite the laser gas;  
a first electrode disposed at a first end of said discharge tube;  
a second electrode disposed at a second end of said discharge tube; and  
a laser gas passage operable to supply the laser gas to said discharge tube, said laser gas passage being connected to said discharge tube,  
wherein a width B of said discharge tube in a direction normal to a gas flow direction in said laser gas passage near a connection portion of said discharge tube and said laser gas passage is larger than an inner diameter A of said discharge tube, and a following relation is satisfied  
 $1.1A < B < 1.7A$   
wherein  $A > 0$  and  $B > 0$ ,  
wherein said discharge tube includes a laser gas inlet, and  
wherein one of said first electrode and said second electrode is disposed near said laser gas inlet.

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9. (Currently amended) A laser oscillator comprising:

a discharge tube operable to pass laser gas inside thereof and to excite the laser gas; and

a laser gas passage operable to supply laser gas to said discharge tube, said laser gas passage being connected to said discharge tube,

wherein a columnar protrusion is provided to said discharge tube, said columnar protrusion being provided at a portion opposite to a connection portion of said discharge tube and said laser gas passage,

wherein the following relations are satisfied

$$0.5A < C < 0.9A$$

$$0.7A < D < 0.9A, \text{ and}$$

wherein  $A > 0$  and is an inner diameter of said discharge tube,  $C \geq 0$  and is a height of said columnar protrusion from a center of said discharge tube and  $D \geq 0$  and is a inner diameter of said columnar protrusion.

13. (Currently amended) A laser oscillator comprising:

a discharge tube having two ends and being operable to pass laser gas inside thereof and to excite the laser gas, said discharge tube being provided with a hole opened to an outside thereof;

a laser gas passage operable to supply laser gas to said discharge tube, said laser gas passage being connected to said discharge tube;

electrodes disposed at both ends of said discharge tube;

a high voltage power supply operable to apply a high voltage between said electrodes;

and

an auxiliary electrode covering the opened hole, said auxiliary electrodes being provided outside of said discharge tube,

wherein said auxiliary electrode is connected to one of said electrodes via a high resistance resistor, and a distance between the hole and an electrode not connected with said auxiliary electrode is between  $0.4L$  and  $0.7L$ , where  $L$  is a distance between said electrodes disposed at both ends of said discharge tube, and

wherein a resistance of said high resistance resistor is  $1 \text{ M}\Omega$  or more and  $100 \text{ M}\Omega$  or less.

## REASON FOR ALLOWANCE

### *Allowable Subject Matter*

3. The following is an examiner's statement of reasons for allowance - Applicant's response filed on August 18, 2004 has been considered, with respect to claims 8, 9, and 13 the references of the record fail to teach or suggest:

#### *Claim 8*

A discharge tube having a first and second electrode disposed at the first and the second end of the discharge tube near the laser gas inlet, and a laser gas passage connecting to discharge tube having a width B and diameter A within the  $1.1A < B < 1.7A$ , where A and  $B > 0$ .

#### *Claim 9*

A laser oscillator having a columnar protrusion locate opposite from discharge tube and laser gas passage, having a diameter of the discharge tube  $A > 0$ , height  $C > 0$  of columnar protrusion from center of said discharge tube, and diameter  $D > 0$  of columnar protrusion satisfy  $0.5A < C < 0.9A$  and  $0.7A < D < 0.9A$ .

#### *Claim 13*

An auxiliary electrode covering opened hole outside discharge tube, wherein auxiliary electrode is connected via a high resistance resistor is  $1M\Omega$  to  $100M\Omega$ , and the distance length L between the hole and electrode is between 0.4L and 0.7L.

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4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


***Communication Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (703) 308-16741. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

Tuan N. Nguyen



MINSUN OH HARVEY  
PRIMARY EXAMINER